

Supplementary information: Formulas used to estimate the *E. coli* ED1a behavior assuming a population genetics approach (Nielsen R, Slatkin M. 2013. An introduction to population genetics: theory and applications. Sinauer Associates, Sunderland, Mass, Ch.3).

Estimation of diversity with Theta of Watterson (θ_w) :

$$\theta_w = S/a_n$$

S number of polymorphic sites in the genome

$$a_n = \sum_{i=1}^{n-1} \frac{1}{i} ; n \text{ being the number of genome compared}$$

$$\theta_w = 2 \cdot N_e \cdot L \cdot \mu_g$$

N_e Effective population size

μ_g Estimate of the per generation per base mutation rate

L Genome length

Estimation of effective population size (N_e):

$$N_e = S / (2 \cdot a_n \cdot L \cdot \mu_g)$$

μ_{est} Estimate of the annual mutation rate is equal to the number of fixation per year

Estimation of the number of generation per day (G):

$$G = \mu_{est} / (\mu_g \cdot 365)$$

Mean time for fixation in generations:

$$2N_e = \theta_w / (L \cdot \mu_g) = S / (a_n \cdot L \cdot \mu_g)$$

Mean time for fixation in days:

$$2N_e / G = \theta_w / (G \cdot L \cdot \mu_g) = S / (G \cdot a_n \cdot L \cdot \mu_g) = S / ((a_n \cdot \mu_{est}) / 365)$$